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Libby Lab Team Conference Call
February 25, 2002

Notes pertaining to SEM vs. IR compare/contrast

Attending:
Mark Raney (Volpe)
Charles Lindebalm (CDM)
Allison (CDM)
Chris Weis (EPA)
Mary Goldade (EPA)
Rob DeMalo (EMSL)
Ron Mahoney (EMSL)

Rob's spiel on SEM vs. IR

Instrumentation	Detection Limit	Advantages	Disadvantages
SEM	0.1% Analysis time: 20-60 minutes Prep time (not including drying/sieving): 20 min	Determine fibrous or not	Preparation. Dry, sieve, (no grinding), create monolayer, mount on stub, gold layer
		Get fiber dimension	Manual analyst observation
		read tremendous area	
IR	1% confidently Analysis time: 1 min. Prep time: 10 min.	Fast screening method	Reports mineralogical info only (no info about fibrous or non)

	0.1% can work on this Analysis time: 12-15 min.	Little Preparation. Dry sample, put in petri dish	
		Automated analysis. 16 samples/3hrs.	

Additional info from USGS phone call (2-25-02 @ 12 noon):

Per G. Meeker: SEM analysis time by sensitivity as follows:

0.1%	<5 min
0.01%	10 min
0.001%	20-60 min.

If you look at 50 fields & 1 fiber found....corresponds to ~1ppm concentration...DL depends on sample conc. & time spent counting.

My impressions based on info to date:

1. Quick & Dirty modified PE study a must (perhaps between these 2 methods only to expedite the process).. Essentially need an "MDL study" to know the realistic sensitivity of the Libby samples. This means using a low level site soil in addition to (if not simply instead of) the PE samples. Whether the PE samples are incorporated depends strictly on how quickly USGS can make the standards. Their addition in the MDL study would be highly beneficial.

2. Based on the 10-100 fold disparity of reporting MDLs between USGS and EMSL, EPA may not be able to achieve a threshold of better than 0.1-0.01% on either IR or SEM (Won't know for sure unless perform #1...).

3. Given the difference in cost between SEM&IR, and assuming no real gain is sensitivity between the methods is realized, then IR should be pursued as the primary screening technique..because prep time for SEM will be significant. ....we also looking at/assuming a better set-up in the field for drying/prepping samples.

4. Based on what I know about what we don't understand about risk, my gut feeling is that neither method will approach sensitivity necessary to be useful in risk assessment. Both methods will be able to demonstrate that PLM is not accurate/reliable for our low-level purposes. But, both methods will be useful in this preliminary screening-level approach. I recommend running some phased approach as follows: IR for 80% of samples and confirm on SEM (screen) and count method on TEM for confirmations...

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Libby Lab Team Conference Call
March 4, 2002

Notes pertaining to SEM vs. IR

Attending:
Mark Raney (Volpe)
Pat Carnes (Volpe)
Anni Autio (CDM)
Mary Goldade (EPA)
Rob DeMalo (EMSL)
Ron Mahoney (EMSL)
Peter Frasca (EMSL) – joined late
Jeanne Orr (Reservoirs)

Rob/Peter: Regarding IR...
Reviewed study data. Confirmed/feel comfortable with the DL of 0.1%

Mary: Let's discuss separately (in turn) the input/info necessary to be in a position to proceed with analysis of Libby soil samples as part of the RI and the estimated time to accomplish each step.

IR

1. Prepare SOP (2 weeks)
2. Get contract in place (4-6 weeks)
3. Additional programming to allow for automation of 0.1% DL (2-3 weeks)
4. Blind PE sample to confirm DL & lab's ability to quantify Libby amphibole in soil (2-3 weeks)

SEM

1. Finish minor changes to SOP (1 week)
2. Blind PE sample to confirm DL & lab's ability to quantify Libby amphibole in soil (2-3 weeks)

Additional info from Mark Raney & Anni Autio phone call (3-4-02 @ 1 pm):

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Anni: Ballpark figures for costs associated with SEM & IR testing (based on EMSL charges):

Method	Description	Approx. Cost/Sample
IR	Screen (1%)	$35
	0.1%	$75
SEM	Total Asbestos Weight %	$125

Other charges to consider:
Labor for:
1. Sample collection
2. Sample preparation
3. Resident sample appointment & tracking
4. Database development (2 months needed)

IR Testing: Solicitations indicate there may be a least on other lab that can test by IR & SEM. Costs there may vary.

My impressions based on info to date:

1. SEM SOP should be made highest priority for EMSL.

2. USGS should be given guidance on priority for PE samples and SEM SOP.

3. Need to send PE samples to EMSL & other prospective labs immediately to test analytical ability. Ask USGS about PE sample status. If this is lagging, discuss w/ USGS the possibility to send samples used in G. Meeker's report from April 2000 meeting.

4. EMSL IR SOP completion should be strongly suggested for completion so we're ready.

5. Volpe/CDM will soon need general guidance about priorities. However, specifically on Version 3 of the database. Currently, they believe that the program that allows for easy binning of fiber sizes used in reporting TEM data is top priority.

6. Ideally and eventually, we'll need another lab to perform IR analysis to stimulate competition and drive down analytical costs.

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